a1 oxidized in the air, resulting in deterioration in magnetic properties. In extreme cases, rapid oxidation leads to ignition, posing safety problems.

Page 3, please delete the first full paragraph, and replace it with the following new paragraph:

a2 However, when thin (or thin and long) green bodies for arc-segment-shaped, R-T-B-based sintered magnets are formed by compression molding in a magnetic field under the conditions described in EXAMPLE 12 of Japanese Patent Laid-Open No. 7-37716, remarkable cracking occurs. Even when green bodies without cracking are obtained, they have an extremely uneven density distribution, resulting in largely deformed sintered bodies, leading to largely deformed sintered bodies poor in orientation, and cannot be put into practical use.

Page 3, please delete the paragraph bridging pages 3 and 4, and replace it with the following new paragraph:

a3 When radially anisotropic, R-T-B-based, sintered ring magnets (hereinafter referred to as radial rings) or arc segment magnets are formed under the conventional production conditions described in Japanese Patent 2,859,517, a radially orienting magnetic field should be applied from the inner surface side to the outer surface side of a cavity of a molding die in the course of molding to impart radial anisotropy to the green bodies, posing the problem that the smaller the inner diameter of a cavity, the weaker the radially orienting magnetic field. Thus, the smaller the inner diameters of radial rings, the poorer the radial orientation of green bodies. In actuality, if an orientation (static) magnetic field or more than 795.8 kA/m (10 kOe) can be applied in a radial direction for several seconds, it would be possible to obtain substantially the same level of

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radial orientation as the orientation of R-T-B-based sintered magnets formed though a molding step in a transverse magnetic field or a vertical magnetic field. However, in the industrial production of radial rings of 10-100 mm in inner diameter, the radially orienting magnetic field applied at the time of molding is as low as about 238.7-795.8 kA/m (3-10 kOe).

a3

Page 4, please delete the second paragraph, and replace it with the following new paragraph:

a4

Also, a radially orienting magnetic field applied during a molding step of radially anisotropic, R-T-B-based sintered arc segment magnets in usual industrial production is as low as about 238.7-795.8 kA/m (3-10 kOe). Thus, like radial rings, the problem of poor radial orientation occurs in the case of R-T-B-based, sintered arc segment magnets of 100 mm or less in inner diameter.

Page 5, please delete the first full paragraph, and replace it with the following new paragraph:

a5

The thin arc segment magnet having a thickness of 1-4 mm according to one embodiment of the present invention is made of a rare earth sintered magnet having a main component composition comprising 28-33 weight % of R and 0.8-1.5 weight % of B, the balance being substantially Fe, wherein R is at least one rare earth element including Y, and T is Fe or Fe and Co, the arc segment magnet having an oxygen content of 0.3 weight % or less based on the total weight of the magnet, a density of 7.56 g/cm^3 or more, a coercivity iHc of 1.1 MA/m (14 kOe) or more at room temperature, and an orientation $Br/4\pi I_{max}$ of 96% or more in an anisotropy-providing direction at room temperature.

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Page 5, please delete the second full paragraph, and replace it with the following new paragraph:

a6 This arc segment magnet preferably has parallel anisotropy and a length of 40-100 mm in an axial direction. Further the ratio I(105)/I(006) is preferably 0.5-0.8, wherein I(105) represents the intensity of an X-ray diffraction peak from a (105) plane, and I(006) represents the intensity of an X-ray diffraction peak from a (106) plane.

Page 5, please delete the paragraph ~~bridging~~ page~~s~~ 5 ~~and 6~~, and replace it with the following new paragraph :

a7 The radially anisotropic arc segment magnet having an inner diameter of 100 mm or less according to another embodiment of the present invention is made of a rare earth sintered magnet having a main component composition comprising 28-33 weight % of R and 0.5-1.5 weight % of B, the balance being substantially Fe, wherein R is at least one rare earth element including Y, and T is Fe or Fe and Co, the arc segment magnet having an oxygen content of 0.3 weight % or less based on the total weight of the magnet, a density of 7.56 g/cm^3 or more, a coercivity iHc of 1.1 MA/m (14 kOe) or more at room temperature, and an orientation [Br// / (Br// + Br⊥)] x 100 (%) of 85.5% or more at room temperature, the orientation being defined by a residual magnetic flux density Br// in a radial direction and a residual magnetic flux density Br⊥ in an axial direction perpendicular to the radial direction.

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Page 6, please delete the first full paragraph, and replace it with the following new paragraph:

a8

This arc segment magnet is preferably as thin as 1-4 mm and as long as 40-100 mm in the axial direction.

Page 6, please delete the second full paragraph, and replace it with the following new paragraph:

a9

The radially anisotropic ring magnet having an inner diameter of 100 mm or less according to a further embodiment of the present invention is made of a rare earth sintered magnet having a main component composition comprising 28-33 weight % of R and 0.8-1.5 weight % of B, the balance being substantially Fe, wherein R is at least one rare earth element including Y, and T is Fe or Fe and Co, the ring magnet having an oxygen content of 0.3 weight % or less based on the total weight of the magnet, a density of 7.56 g/cm^3 or more, a coercivity iHc of 1.1 MA/m (14 kOe) or more at room temperature, and an orientation [Br// / (Br// + Br⊥)] x 100 (%) of 85.5% or more at room temperature, the orientation being defined by a residual magnetic flux density Br// in a radial direction and a residual magnetic flux density Br⊥ in an axial direction perpendicular to the radial direction. The ring magnet preferably has portions bonded by sintering.

Page 6, please delete the paragraph bridging pages 6 and 7, and replace it with the following new paragraph:

a10

The method for producing a rare earth sintered magnet according to the present invention comprises the steps of finely pulverizing an alloy for the rare earth sintered magnet to an average particle size of 1-10 μm in a non-oxidizing atmosphere; introducing the resultant fine powder into a mixture liquid comprising 99.7-99.99 parts by weight of at least one oil selected form the group consisting of a mineral oil, a synthetic oil and a vegetable oil and 0.01-0.3 parts by weight of a nonionic surfactant and/or an anionic surfactant; subjecting the resultant slurry mixture to molding in a magnetic field; and carrying out oil removal, sintering and heat treatment in this order. The rare earth sintered magnet preferably has a main phase composed of an $R_2T_{14}B$ intermetallic compound, wherein R is at least one rare earth element including Y, and T is Fe or Fe and Co. The molding in a magnetic field is preferably compression molding, and the compressed green body preferably has a density distribution of 4.3-4.7 g/cm^3.

Page 7, please delete the second full paragraph, and replace it with the following new paragraph:

a11

Fig. 2 is a graph showing the relation between the type of a surfactant added to a slurry and the oil content in a green body formed from the slurry;

Page ~~8~~ 7, please delete the ~~first~~ 10th full paragraph, and replace it with the following new paragraph:

a12

Fig. 10 is a graph showing the relation between the density of a green body for a radial ring and the molding pressure;

4th

Page 8, please delete ~~the sixth~~ full paragraph, and replace it with the following new paragraph:

a13

Fig. 14(a) is a view showing the magnetic flux density distribution on the surface of the radial ring of the present invention having sintering-bonded portions; and

Page 8, please delete the ninth full paragraph, and replace it with the following new paragraph:

a14

The preferred composition of the first $R_2T_{14}B$-type, sintered magnet comprises 28-33 weight % of R and 0.8-1.5 weight % of B, the balance being substantially Fe, wherein R is at least one rare earth element including Y, and T is Fe or Fe and Co.

Page 9, please delete the third full paragraph, and replace it with the following new paragraph:

a15

T is Fe or Fe + Co. The inclusion of Co improves corrosion resistance and elevates the Curie temperature, thereby improving the heat resistance of the $R_2T_{14}B$-type, sintered magnet. However, when the amount of Co exceeds 5 weight % based on the total weight of the magnet, Fe-Co phases harmful to magnetic properties are formed, resulting in a drastic decrease in Br and iHc. Accordingly, the amount of Co is preferably 5 weigh % or less. On the other hand, when the amount of Co is less than 0.5 weight %, effects of improving corrosion resistance and heat resistance cannot be obtained. Accordingly, the amount of Co is preferably 0.5-5 weight %.

Page 10, please delete the first full paragraph, and replace it with the following new paragraph:

a16

The amount of carbon contained as an inevitable impurity is preferably 0.10 weight % or less, more preferably 0.07 weight % or less, based on the total weight of the magnet. The reduction of the carbon content suppresses the formation of rare earth carbides, resulting in an increase in iHc, $(BH)_{max}$, etc.

Page 10, please delete the second full paragraph, and replace it with the following new paragraph:

a17

The amount of nitrogen contained as an inevitable impurity is preferably 0.15 weight % or less, based on the total weight of the magnet. When the nitrogen content exceeds 0.15 weight %, Br decreases drastically. Incidentally, the lower limit of the nitrogen content is practically about 0.002 weight %. A surface treatment coating such as Ni plating, etc., is formed on the arc segment magnet and the ring magnet, and good corrosion resistance is achieved when the nitrogen content is 0.15 weight % or less.

Page 10, please delete the paragraph bridging pages 10 and 11, and replace it with the following new paragraph:

a18

The preferred composition of the second $R_2T_{14}B$-type, sintered magnet comprises 28-33 weight % of R, 0.8-1.5 weight % of B, and 0.6 weight % of M_1, the balance substantially Fe, wherein R and T are the same as in the first $R_2T_{14}B$-type, sintered magnet, and M_1 is at least one element selected from the group consisting of Nb, Mo, W, V, Ta, Cr, Ti, Zr and Hf. Because the

a18 second $R_2T_{14}B$-type, sintered magnet is the same as the first $R_2T_{14}B$-type, sintered magnet except for M_1, explanation will be made only on M_1 here.

Page 11, please delete the first full paragraph, and replace it with the following new paragraph:

a19 The amount of a high-melting point metal element M_1 is 0.6 weight % or less, preferably 0.01-0.6 weight %, to increase magnetic properties. With 0.6 weight % or less of M_1, the excess growth of main phase crystal grains is suppressed during the sintering process, thereby making it possible to stably achieve iHc of 1.1 MA/m (14 kOe) or more. However, when the M_1 content exceeds 0.6 weight %, the normal growth of main phase crystal grains is rather hindered, resulting in decrease in Br. On the other hand when the M_1 content is less than 0.01 weight %, effects of M_1 improving magnetic properties cannot be obtained.

Page 11, please delete the paragraph bridging pages 11 and 12, and replace it with the following new paragraph:

a20 The amount of M_2 is 0.01-0.4 weight %. With respect to each element, the inclusion of A1 contributes to increase iHc, resulting in improvement in corrosion resistance. When the amount of A1 is more than 0.3 weight %, Br decreases drastically. On the other hand, when the amount of A1 is less than 0.01 weight %, effects of improving iHc and corrosion resistance cannot be obtained. The inclusion of Ga contributes to remarkably increase iHc. When the amount of Ga is more than 0.3 weight %, Br decreases drastically. On the other hand, when the amount of Ga is less than 0.01 weight %, effects of improving iHc cannot be obtained. The inclusion of a trace amount of Cu contributes to improvement in corrosion resistance and

increase in iHc. When the amount of Cu is more than 0.3 weight %, Br decreases drastically. On the other hand, when the amount of Cu is less than 0.01 weight %, effects of improving corrosion resistance and iHc cannot be obtained. When two or more of A1, Ga and Cu are contained, the amount of M_2 is their total amount.

a20

Page 12, please delete the second full paragraph, and replace it with the following new paragraph:

a21

The first arc segment magnet of the present invention has an oxygen content of 0.3 weight % or less based on the total weight of the magnet, a density of 7.56 g/cm^3 or more, a coercivity iHc of 1.1 MA/m (14 kOe) or more at room temperature, and an orientation $Br/4\pi I_{max}$ of 96% or more in an anisotropy-providing direction at room temperature. Here, $4\pi I_{max}$ is the maximum value of $4\pi l$ in a curve of $4\pi I$-H, wherein $4\pi I$ is the intensity of magnetization, H is the intensity of a magnetic field, and Br is the residual magnetic flux density.

Page 14, please delete the third full paragraph, and replace it with the following new paragraph:

a22

The fine pulverization of an alloy is carried out by a dry pulverization method or a wet pulverization method. The dry pulverization method is carried out by a jet mill, etc., in an inert gas atmosphere having an oxygen concentration of 0.1 % by volume or less, preferably 0.01 % by volume. The wet pulverization method is carried out by a wet ball mill, etc., under the non-oxidizing condition.